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Interventions to Reduce Hospitalization among People with Serious Mental Disorders

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This brief literature overview summarizes the evidence on community-based services that potentially reduce the need for hospitalization. People with serious mental illness are generally at high risk of re-hospitalization. Years ago, Anthony et al. (1990) estimated 30-40% readmission in six months after discharge from the hospital, 35-50% after one year, and 65-75% after five years. One review from the same era found that the strongest predictors (risk factors) of readmission were medication non-compliance, comorbid substance abuse, access to outpatient services, quality of life, and race/ethnicity (Sullivan, Wells, Morgenstern, and Leake, 1995).

In the years since those studies, different mental health systems have introduced interventions to reduce re-hospitalization, which continues to be predicted by previous hospitalizations, medication non-adherence, substance abuse, and non-engagement in outpatient services.

Here we provide a current update on the effects of community-based interventions on re-hospitalization based on systematic reviews and meta-analyses. We have estimated the hospital reduction effect for individual interventions, but few if any studies have addressed combined effects.

Summary

Services Hospital Reduction

Diversion 50%
Transition 25%
Assertive Community Treatment 41%
Case management lack of data
Therapy 25% (variable)
Medication assistance 60%
Family education 22%
Supportive housing 33%
Supported employment 55% (variable)
Peer support lack of data
Medical services lack of data
Substance abuse treatment unclear (variable)
Combined community-based services lack of data

1. Hospital diversion services

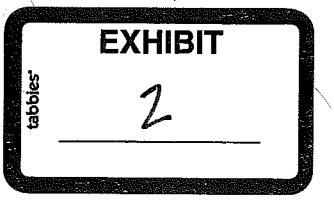
Crisis hotlines, mobile crisis teams, crisis apartments, walk-in crisis centers, police Crisis Intervention Teams, diversion courts, and other crisis services aim to prevent unnecessary hospitalizations. These services are not uniformly defined, but they seem to be effective for patients who are not immediately dangerous. People want to be treated respectfully, by staff who understand mental illness; they also prefer continuity of staff, and want some degree of control.

The literature shows that a variety of diversion services can reduce hospitalizations by approximately 50% (NICE Guidelines, Aug, 2016).

2. Transition services

Transition services refer to a process to ensure that individuals are connected to and able to access needed community services, especially when they are leaving the hospital, jail, or homeless shelters. These services include transitional case management, critical time intervention, and other interventions.

Transition services generally reduce readmissions (NICE Guidelines, Aug, 2016), but the duration and magnitude of effects are not certain because context differs widely. In one study, just meeting with a psychiatrist within 30 days of discharge reduced re-hospitalization of all patients by 22% and of high-risk



patients by 29% (Kurdyak et al., 2017).

3. Case management

Forms of case management (sometimes called care management) include assertive community treatment, intensive case management, and regular case management. Only assertive community treatment, which is a team-based, intensive, comprehensive program, has been carefully defined and studied. In the current era, however, all forms of case management should include consumer-centered outreach, engagement, treatment planning, coordinating medical services, and management of co-occurring medical needs.

Assertive community treatment reduces hospitalizations by 41% (RR = .59 in one review). The intervention also reduces length of hospitalizations (no RR). Data on other forms of case management are limited and inconsistent. See Mueser (1990) for a thorough review and McDonagh (2017) for a more recent review. Currently, many patients with serious mental illness are diverted to incarceration or homelessness rather than hospitalization. Assertive community treatment reduces homelessness, but the data on incarceration are less clear.

Because disengagement from services often precedes re-hospitalization, one common approach has been to institute some form of mandatory outpatient treatment; but results have not consistently supported mandatory treatment. A recent Cochrane meta-analysis found no significant differences between court-ordered and voluntary outpatient treatment with regard to re-hospitalization, medication compliance, arrests, or homelessness (Kisely, 2017). Other common recommendations, including shared decision-making and enhanced outreach, have not been studied (Dixon, 2016).

4. Mental health therapies

A wide range of mental health therapies have shown effectiveness in enhancing psychological health (Almerie, 2015; Bauml, 2006; Lincoln, 2007; McDonagh, 2017; NICE Guidelines, 2014; Xia, 2011). Most do not specifically target hospital outcomes, but several have evidence supporting reduced rates of relapse and re-hospitalization following interventions, including psychoeducation, cognitive behavioral therapy, and social skills training. For example, psychoeducation was associated with a reduced hospitalization rate (41% vs 58%) and shorter time spent in the hospital (39 days vs 78 days) up to two years after the intervention (Bauml, 2006). Other studies have shown small to medium effects of psychoeducation on re-hospitalization rates over various time periods (Lincoln, 2007; Xia, 2011). A systematic review found that, at 18-month follow-up, cognitive behavioral therapy showed decreased hospitalization rates (RR = 0.74; 21.5% v 30.0%) and an average of 8 fewer days spent in the hospital (NICE Guidelines, 2014). Family interventions (NICE Guidelines, 2014) and social skills training (Almerie, 2015) have also been associated with reduced hospitalizations.

5. Medication management services

Medication non-adherence may occur in various forms (e.g., missing medication altogether, taking more or less than prescribed) and may be intentional or unintentional (Weiden, 2004; Velligan, 2017). The most common reasons for non-adherence are lack of insight, substance abuse, and negative beliefs or attitudes about medications (Higashi, 2013; Velligan, 2017). In any form, medication non-adherence is associated with significant increase in risk of hospitalization (Higashi, 2013; McQuade & Gromova, 2015; Weiden, 2004; Velligan, 2010; Velligan, 2017). For example, missing medication for 1-10 days was associated with nearly two times the risk of hospitalization, missing for 11-30 days showed nearly three times the risk of hospitalization, and missing for more than 30 days was related to almost four times the risk of hospitalization (Weiden, 2004). It is not clear if these findings apply to the 25% of patients who are non-responders.

Effective interventions aimed at improving medication adherence are tailored to address the particular needs of each individual (i.e., reasons for non-adherence), often using multiple approaches to target multiple needs (Velligan, 2010). Successful approaches include monitoring of medications, symptoms, and/or side effects; cognitive-behavioral approaches; psychoeducation; shared decision-making; assertive case management; environmental supports; and use of long-acting, injectable medications. Multiple-component approaches are more effective. One telemedicine intervention to enhance adherence delivered via mobile phone demonstrated a 60% reduction in hospitalizations over 9 months (Velligan, 2010).

Many studies also show that use of oral clozapine and long-acting injectable antipsychotics reduce hospitalization more than other oral antipsychotics (e.g., Tiihonen et al., 2011; Taipale, in press).

6. Family education and support

Family psycho-education programs provide families with education regarding mental illness, support from other families, and help with developing coping skills. They can be delivered with single families or in multiple-family groups. Most experts recommend at least six months of participation. Programs often begin during inpatient care and extend for several months of outpatient services. Families themselves sometimes provide this service through a structured family-to-family program.
Research shows that family psycho-education reduces relapses and hospitalizations over at least two years (NICE Guidelines, Aug, 2016; Cochrane database, 2010). Family interventions reduced risk of hospitalizations by 22% across 8 RCTs.

7. Permanent supportive housing

Supportive housing programs combine some form of access to scattered-site housing with some form of outreach case management. Access to housing is often demand-free, meaning that people do not have to agree to treatment, medications, and other conditions before entering housing. Case management is often provided by assertive community treatment teams that encourage participation in other interventions after people become stably housed.

Supportive housing programs consistently reduce hospitalization, by 33% in one review (Rog, 2014).

8. Supported employment/education

Evidence-based supported employment for people with serious mental illness, called Individual Placement and Support, or IPS, includes patient choice regarding timing, type of job, and amount of work; personalized job development and assistance with finding a job; ongoing job support as needed; and close collaboration between the employment specialist and the mental health team.
Research shows that supported employment enables about 60% of people with serious mental illness to find competitive employment and that having competitive employment reduces hospitalization and emergency room visits (Drake, 2016). A few studies find randomization to IPS services reduces hospitalization, perhaps because those who gain employment use less hospitalization and emergency services. In the longest study currently available, a five-year randomized trial (Hoffman, 2014), found a 55% reduction in hospitalization among those in IPS supported employment.

The literature on supported education is weak: no clear models and no clear outcomes exist.

9. Peer support services

Peer supports in mental health treatment and recovery coaches in substance abuse treatment are widely recommended, especially for patients who are difficult to engage in treatment (Dixon, 2016). While some studies have shown small reductions in re-hospitalization (e.g., Chien, 2013), two comprehensive systematic reviews have determined that research involving peer support in mental health is methodologically flawed and provides very low quality evidence regarding most outcomes, including hospitalization rates (NICE 2014; Pitt et al 2013). The effects of peer supports on hospitalization are not clear due to the lack of rigorous studies.

10. Medical services

People with serious mental illness have high rates of comorbid medical problems and a reduced life expectancy of approximately eight years (Druss, 2018; Liu, 2017); they also have high rates of hospitalization and re-hospitalization (Sprah, 2017). Poor health and medical comorbidities appear to be important predictors of hospitalization (NICE Guidelines, 2014; Sprah et al., 2017). Many of these comorbidities are preventable and treatable; screening and medical/behavioral interventions show promising results for early detection and improvement, especially with regard to tobacco cessation and nutrition/weight/exercise (NICE Guidelines, 2014; Liu, 2017). People with serious mental illness should have access to numerous community health services including, among others, appropriate psychotropic medication services, medical screening and treatment, tobacco cessation, and behavioral weight management interventions (Liu, 2017). The impact of treating medical problems on hospitalization rates is unclear, however, again because of the lack of rigorous studies.

One approach to this issue is the development of collaborations between primary care and mental

health care services for people with serious mental disorders; these approaches are often referred to as collaborative or integrated care. Unfortunately, evidence on the effectiveness of these interventions is sparse. A 2013 systematic review found only one RCT of collaborative care, which involved veterans with bipolar disorder. This RCT found small reductions in hospitalization rates for those in collaborative care versus treatment as usual at two- and three-year follow-up, but the effects were of small magnitude, the study was at high risk of bias, and the evidence was of low to very low quality. No studies have included individuals with schizophrenia-spectrum disorders (Riley, 2013). A later study of individuals with depressive disorder found reductions in hospitalization, for up to one-year follow-up (Chung et al 2014; Wells et al 2013). Numerous collaborative or integrated care interventions are in development, but the approaches are heterogeneous and most only examine direct physical health benefits (with mixed results), not impact on hospitalization rates or community tenure (Liu, 2017).

11. Substance abuse treatment
About half of people with serious mental disorders have co-occurring substance use disorders. Integrated dual disorders treatments, in which the same interdisciplinary team combines mental health and substance abuse treatments, generally improve illness outcomes, but few studies have addressed hospitalization as an outcome, and the findings on hospital reduction have been mixed, according to the most recent comprehensive review (Drake, 2008).

12. Combinations of community-based services
Individual community-based services often reduce hospital use, as we have reviewed above. Remarkably, studies have not examined the overall impact of combining some of these services in state-sponsored, outpatient agencies. Assertive community treatment does often incorporate many of the interventions reviewed above, which explain its consistent effectiveness in reducing hospitalization.

Person-level factors that correlate with high-risk of hospitalization

Amount of previous hospitalization.
Medication non-adherence.
Co-occurring substance use disorder.
Co-occurring medical problems.
Unstable housing.
Lack of family/social supports.
Aggressive behavior.
Preferring hospital over community as living environment.

Community-based services that consistently reduce hospitalization

Diversion services through mental health courts and crisis teams.
Transition services that coordinate care between inpatient and outpatient.
Services that help people adhere to evidence-based medication regimens.
Assertive community treatment for people with high-risk problems.
Educational and behavioral therapies.
Family psychoeducation.
Supported housing.
Supported employment.

Community-based services that probably reduce hospitalization but have little research

Treatment of co-occurring substance use disorder.
Treatment of co-occurring medical problems.
Peer support.